

variabilis Henderson is found. Farther up the river, on the steep slope bordering the south side of Lake Chelan, a totally different race was collected. However, much collecting must yet be done over a considerable territory along the Columbia above Umatilla before the limits of the range of typical *O. strigosa* can be defined.

THE FAMILY *CYPRAEIDAE* IN THE HAWAIIAN ISLANDS

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The confusion which results from the inclusion, in various collections of and articles on Hawaiian *Cypraeidae*, of cowries which do not occur within hundreds of miles of the Hawaiian archipelago, warrants a paper which segregates the Hawaiian species from those found in other regions of the Pacific. This article will summarize in a check-list those species which are found in Hawaii, eliminating those which are foreign.

Of the many species of the genus *Cypraea*, twenty-nine are found in Hawaii. Most of these may be taken in the shallow reef waters, although with the exception of *Cypraea caput-serpentis* L., none is common. The author has collected eleven species of the total number, and has obtained three in the fossil state.

To Mr. Jens Mathias Ostergaard I wish to express my sincere appreciation for his helpful encouragement and assistance. I am indebted to Mr. David Thanuum for the use of specimens in his private collection, and to Mr. Edward Bryan for his courtesy in allowing me to use the shells housed in the Bernice P. Bishop Museum, Honolulu.

CYPRAEA ARENOSA Gray, Zool. Jour., i, p. 147, pl. 7, 12, f. 6, 1824

This species is dying out in the Hawaiian Islands and is very rare.

In 1905 Mr. Jens M. Ostergaard collected four individuals from the Honolulu Harbor dredgings.

There are three specimens in the L. A. Thurston collection which is housed in the Bernice P. Bishop Museum, Honolulu.

One of these was taken at North Kona, Hawaii, August 30, 1925. Two were taken between Punnoa Point and Mala Wharf, Lahaina, Maui, June 1925.

Mr. David Thaanum has four specimens collected at Lahaina, Maui in 1936, and two others that were collected in about twenty fathoms of water at Waikiki, Oahu, also in 1936.

Mr. Ted Dranga has five specimens in his collection: one was taken at Waikiki, Oahu, August 9, 1936; three were collected at Lahaina, Maui, June 1936, and one specimen was taken at Fort Kamehameha, from the channel entrance of Pearl Harbor, January 25, 1927.

CYPRAEA ANNULATA Gray. Zool. Jour., iv, p. 88, 1829

Although rare in Hawaii, this shell has been taken in dredgings from the Honolulu Harbor.

CYPRAEA CAPUTSERPENTIS Linnaeus. Syst. Nat., p. 1175, 1767

In Hawaii this is the commonest species of the genus. It shows a racial difference from the South Pacific form by darker marginal filling and brown interstices between the teeth.

CYPRAEA CARNEOLA Linnaeus. Syst. Nat., p. 1174, 1767

Several very large specimens which came from the island of Maui are in the Thurston collection in the Bishop Museum. It is not abundant; the author has taken a number of specimens from the washed dredgings from Honolulu Harbor and from Sand Island in the Harbor.

CYPRAEA CICERCULA var. TRICORNIS Jousseume. Revue et Mag. Zool., p. 9, pl. 1, f. 3, 4, 1847

The typical *Cypraea cicercula* L. has the base of the shell painted with four conspicuous chestnut spots, while the Hawaiian variety has never been collected possessing these spots. This is never taken alive, but is quite common in the old dredgings from Honolulu Harbor.

CYPRAEA CRUENTA Gmelin. Syst. Nat., p. 3420, 1790

Quite rare in number of individuals collected alive, this species is fairly common on some of the Islands as beach shells.

CYPRAEA EROSA Linnaeus. Syst. Nat., p. 1179, 1767

This species is apparently almost extinct in Hawaii, but common in the fossil state on Oahu.

CYPRAEA FIMBRIATA Gmelin. Syst. Nat., p. 3420, 1790

This is the smallest of the Hawaiian cowry shells. A large specimen is about half an inch in length. It is not uncommonly taken alive, and is quite common in the beach sands.

CYPRAEA HELVOLA Linnaeus. Syst. Nat., p. 1180, 1767

Robert's note on the Hawaiian form is as follows, "Those shells from the Sandwich Islands are often pale yellow, faintly spotted, with a whitish base and extremities."¹ This description applies only to the faded dead shells which were dredged in vast quantities from Honolulu Harbor channel at various times. It is common as a beach shell, but rarely taken alive.

CYPRAEA ISABELLA Linnaeus. Syst. Nat., p. 1177, 1767

This species is common, but rarely taken because of its concealment in coral heads.

CYPRAEA LYNX Linnaeus. Syst. Nat., p. 1176, 1767

This form is very rare, although an occasional shell may be taken on the beaches. The author has taken but one specimen, a fossil, embedded in limestone on Sand Island.

CYPRAEA MADAGASCARIENSIS Gmelin. Syst. Nat., p. 3419, 1790

This is one of the five endemic Hawaiian species. It is rarely taken alive, but is commonly picked up on the beaches of the Island of Kauai. It is also not an uncommon beach shell on Oahu.

CYPRAEA MAURITIANA Linnaeus. Syst. Nat., p. 1176, 1767

The Mauritius cowry is one of the largest of the Hawaiian forms. It is always taken where there is a strong, breaking surf. It is quite common, being sold as a curio in many of the stores on Oahu.

¹ Roberts, "Monograph of the Family Cypraeidae," *Manual of Conchology*, Vol. 7, p. 194, 1885.

CYPRAEA MONETA Linnaeus. Syst. Nat., 1178, 1767

The money cowry is apparently restricted to three localities on the Island of Oahu: Kaneohe Bay, Kewalo Basin, and Waikiki. It is not at all common.

CYPRAEA NUCLEUS Linnaeus. Syst. Nat., p. 1181, 1767

Occasionally an individual of this species is collected along the beaches. It is very rare; a number were obtained in the dredgings of the Honolulu Harbor.

CYPRAEA OSTERGAARDI Dall. Nautilus, vol. xxv, pp. 49, 50, Oct., 1921

Only nine specimens have ever been collected. Mr. Ostergaard collected five, and four have been found since his first collection. This form is one of the endemic species.

CYPRAEA PEASEI Sowerby. Thes. Conch. Cyp., No. 113, f. 167, 168, 1870.

The shell is thin and light, the most delicate of the Hawaiian Cypraeidae. It is rare. Mr. Jens. M. Ostergaard has eighteen specimens taken from Honolulu Harbor dredgings of 1905 and 1915.

Mr. David Thaanum has twenty specimens taken at Hilo, Hawaii, and one specimen from Waikiki. The Hilo specimens were collected in 1920; the Waikiki specimen in 1936.

Mr. Ted Dranga has one specimen in his collection taken at Waikiki, Oahu, September, 1936.

CYPRAEA PORARIA Linnaeus. Syst. Nat., 1180, 1767

This shell is often found on the beaches. It is rarely taken alive.

CYPRAEA PUNCTULATA Gmelin. Syst. Nat., p. 3404, 1790

This shell is quite common in the dredgings from Honolulu Harbor. The beach shells are not uncommon. It is rarely taken alive.

CYPRAEA RASHLEIGHANA Melvill. Jour. of Conch., V., p. 288, pl. ii., f. 26, 1887

Beach shells of this species are only occasionally collected, but it is frequently found in dredgings from Honolulu Harbor.

CYPRAEA RETICULATA Martyn. Universal Conchology, pl. 15, 1782

This shell is fairly abundant, being taken alive and as a beach shell on Rabbit Island, Oahu, and elsewhere.

CYPRAEA SEMIPLOTA Mighels. Proc. of the Bost. Soc., ii, p. 24, 1848

One of the endemic species, this form is found in quantity on the beaches, and the live mollusk is almost as frequently found in the shallow reef waters.

CYPRAEA SCURRA Chemnitz. Conch. Cab. vol. x, pl. 144, p. 103, f. 1338, 1788

This species is rare in both the living and dead states. Mr. Jens M. Ostergaard collected four individuals in dredgings from Honolulu Harbor in 1915.

Mr. Ted Dranga took one live specimen at the channel entrance of Pearl Harbor, near Fort Kamehameha, January 25, 1927.

The author has ten specimens taken in 1935 and 1936 from the old Honolulu Harbor dredgings at Fort Armstrong, Oahu.

CYPRAEA SULCIDENTATA Gray. Zool. Jour., i, p. 148, 1824

One of the endemic species, this mollusk is not uncommon in the Honolulu Harbor dredgings. The living and dead forms are to be collected in greater quantity on the Pearl and Hermes Reef than anywhere else on the Islands. The author has taken two live shells off the shores of Rabbit Island, Oahu.

CYPRAEA TALPA Linnaeus. Syst. Nat., p. 1174, 1767

Occasionally an individual of this species is taken alive. Dead shells in almost perfect condition may be found in the dredgings on Sand Island in Honolulu Harbor.

CYPRAEA TESSELLATA Swainson. Zool. Jour., i, p. 150, 1824

An endemic form, this shell is very rare. Dead, it is to be found occasionally on the beaches and, more frequently, on Pearl and Hermes Reef.

CYPRAEA TIGRIS Linnaeus. Syst. Nat., p. 1176, 1767

This is the largest and possibly the rarest of the Hawaiian *Cypraea*. Mr. David Thaanum has one specimen in his collection that was collected alive by Mr. Thaanum and Mr. Dranga on the reef at Lahaina, Maui, 1936. This is the first authentic record of this species being taken alive in the Hawaiian Islands. One specimen was taken alive by two men with a diving helmet off the Waikiki reef in front of the Royal Hawaiian Hotel, 1936. This specimen is now in Mr. Ted Dranga's collection.

CYPRAEA VITELLUS Linnaeus. Syst. Nat., p. 1176, 1767

Several specimens have been collected in the fossil state on Oahu.

It is very rarely taken alive. Mr. Ted Dranga has two individuals collected by Mrs. Paul Byer on the reef at Moku O Loe Islet in Kaneohe Bay, Oahu.

Mr. Jens M. Ostergaard has in his collection two specimens which he himself took on the Waikiki reef, Oahu.

The author has one specimen in his collection that was collected by Mrs. R. T. Christofferson on Moku O Loe Islet reef in Kaneohe Bay, Oahu in 1927, and one specimen that was dredged from Honolulu Harbor, Oahu.

Mr. David Thaanum has three specimens taken in Kaneohe Bay, Oahu, 1916.

CYPRAEA CHILDRENI Gray. Zool. Journal, vol. i, p. 518.

Mr. Jens M. Ostergaard collected two dead specimens from the Honolulu Harbor dredgings, and has observed a number in the fossil state in the limestone outcroppings on the island of Oahu.

GONIOBASIS COLUMBIENSIS WHITEAVES

BY CALVIN GOODRICH

Through the kindness of Mr. Aurèle La Rocque of the National Museum of Canada, I have been privileged to examine the types of *Goniobasis columbiensis* Whiteaves. The species was described and figured in the NAUTILUS, 19, 1905: 61, 62. The specimens had been collected twenty-two years before this, the locality being